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**Change History**

<i>Date</i>	<i>Version</i>	<i>Change</i>
August 11, 2005	1.0	
January 31, 2005	1.0.1	Text changes
March 15, 2007	1.1	Updated to include caCORE 4.0 technology stack
April 17, 2008	1.1.1	Updated technology stack, text, and time line

## **Introduction**

In order to ensure that NCICB applications are regularly migrated to new versions of the chosen technology stack, the NCICB SCM Initiative is promoting an annual technology stack migration plan as described in this document.

Very briefly, the plan involves having three supported technology stacks active at any given time, which will rotate periodically to ensure that the latest technology is available for ongoing development efforts. All technology stacks will be openly discussed and agreed upon by all development groups (as far as feasible) prior to implementation, and all rotations will be coordinated with official product releases to minimize disruptions.

## **Overview of the Three Stack Rotation Plan**

Under the three stack rotation plan, in any given period, there will be as many as three supported technology stacks: a deprecated stack, a current or 'official' stack, and a future or target stack. Approximately every twelve months (coordinated with official release dates), the deprecated stack is retired, and applications running on it are migrated to the future stack. The current stack becomes the new deprecated stack, and developers are strongly encouraged to move off it. The future stack becomes the new official stack, a new future stack is proposed, and a period of negotiation begins to give all groups an opportunity to provide input into the new future stack. Once a future stack has been agreed upon, it will be made available for development teams as quickly as possible.

Note that adopting a technology stack is an 'all-or-nothing' decision. That is, teams are not free to pick and choose individual components from among the three supported stacks.

Also note that at any given time, there is no compunction for an application to be on any particular stack, only which it must be on one of the supported stacks. By the time a particular stack becomes deprecated, a development team will have two more modern stacks to choose from, both of which have been in operation for around one year (plenty of time for any issues to have been dealt with).

## **Deployments to the Retired and Deprecated Stacks**

After stack rotation, the deprecated stack becomes 'retired', and no future deployments to that stack will be performed, except in extraordinary circumstances (such circumstances will require explicit approval from government sponsors). Repeated deployments to the deprecated stack will be allowed, but teams will be strongly encouraged to migrate to a more up-to-date stack. Since this plan deliberately incorporates long lead times on stack rotations, it is expected that teams will have more than sufficient time to prepare for rotations during normal development cycles. As an example, given the annual rotation plan, the 'future' stack has a lifespan of eighteen months or more before it will be retired.

## Patches and Emergency Fixes

On occasion, a problem with one or more stacks may be discovered that must be addressed immediately. Under those circumstances, the resources of the NCICB Change Control Group will be utilized to notify affected parties of the impending change, and the appropriate solution will be negotiated and implemented. It may be determined that the best solution is to immediately deprecate the affected stack and migrate all applications on it upwards. If the problem is discovered on the future stack there may be no other choice but to immediately apply the required fixes.

Technology stack patches will be applied using the same general guidelines as operating system patches. They will be first applied (with appropriate notification) to the development tier, and after a month, to the QA tier. **In the absence of any problem reports from developers**, the patch will then be promoted to staging and production, and appropriate notifications will be sent out.

## Summary of Existing Stacks

Effective April 1, 2008, the current and future stacks consist of the technologies outlined below. Please note that this is only a summary of the stack contents. A complete description can be found here:

<https://gforge.nci.nih.gov/docman/view.php/27/11134/CBIIT-TechStack-2008.xls>

### *Current Stack*

JDK 1.5.0\_10  
JBoss 4.0.5  
Tomcat 5.5.20  
Apache 2.2.x  
MySQL 5.0.27  
Ant 1.6.5

### *Future Stack*

JDK 1.5.0\_10  
JBoss 4.2.2GA  
Tomcat 6.0.x  
Apache 2.2.x  
MySQL 5.0.45  
Ant 1.7.0

All other technology configurations will be considered deprecated, and deployments to those stacks will only be performed under extraordinary circumstances.

## Planned Rotation

The next rotation period is to be determined.

## **Additions to the Technology Stack**

It is expected that new technologies will need to be added to the official technology stack from time to time. However, in order to maintain a coherent set of technologies, new technologies will only be added after a suitable discussion and review period. Teams considering using a technology not defined here should post their comments in the [discussion forums](#) and contact the SCM Administrator at [scmadmin@mail.nih.gov](mailto:scmadmin@mail.nih.gov) as soon as possible.